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YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER
FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
1712	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

mk-6

Office Action Summary	Application No.	Applicant(s)	
	10/070,827	KIUCHI ET AL.	
	Examiner	Art Unit	
	Michael J Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-78* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,28-51 and 61-75* is/are rejected.

7)☒ Claim(s) *13-30,52-60 and 76-78* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,4,5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 61-69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 61-63 recite the limitation "the silicone compound" in the laminate of claims 43, 44, and 45. There is insufficient antecedent basis for this limitation in the claim. The silicone compound is introduced in claims 55-57; therefore, claims 61-63 should be dependent upon claims 55-57, not claims 43-45.

Claims 64-66 recite the limitation "the silicone compound" in the laminate of claims 43, 44, and 45. There is insufficient antecedent basis for this limitation in the claim. The silicone compound is introduced in claims 55-57; therefore, claims 64-66 should be dependent upon claims 55-57, not claims 43-45.

Claims 67-69 recite the limitation "the reactive group" in the laminate of claims 43, 44, and 45. There is insufficient antecedent basis for this limitation in the claim. The reactive group of the silicone compound is introduced in claims 64-66; therefore, claims 61-63 should be dependent upon claims 64-66, not claims 43-45.

Claim Objections

4. Claims 28-30 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 28-30 attempt to further limit claims 1-3 by reciting, "which is used for impregnation into a substrate and subsequent curing for formation of a laminate". Although the claim is not technically a "use claim", the recitation of intended use fails to further limit the chemical and physical make-up of the composition.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language;
>
> or
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002

do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-9 and 28-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Osada et al. (US Pat. No. 6,162,878).

Regarding claims 1, 4, 7, 31, and 34, Osada et al. disclose ***(1)*** a flame-retardant epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (Abstract; Table 1: Comparative Example 4), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (Abstract; Table 1: Comparative Example 4; column 15, lines 20-35); ***(4)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (Abstract; Table 1: Comparative Example 4; column 15, lines 20-35); ***(7)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (Abstract; Table 1: Comparative Example 4; column 15, lines 20-35); ***(31)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (Abstract; Table 1: Comparative Example 4; column 15,

lines 20-35); and ***(34)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (Abstract; Table 1: Comparative Example 4; column 15, lines 20-35).

Regarding claims 2, 5, 8, 32, and 35, Osada et al. disclose ***(2)*** a flame-retardant epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (Abstract; Table 1: Comparative Example 4), wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(5)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(8)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(32)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); and ***(35)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14).

Regarding claims 3, 6, 9, 33, and 36, Osada et al. disclose ***(3)*** a flame-retardant epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (Abstract; Table 1: Comparative Example 4), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (Abstract; Table 1: Comparative Example 4; column 15, lines 20-35), and the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C') containing in a molecular chain, a structural unit derived from a phenol (A') and a structural unit derived from an aromatic compound (B') other than the phenol (A') (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(6)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(9)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); ***(33)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14); and

(36) wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (Abstract; Table 1: Comparative Example 4; column 14, line 63 through column 15, line 14).

Claims 28-30 are anticipated because they fail to further limit parent claims 1-3.

7. Claims 1-9, 28-36, 40-51, and 70-75 are rejected under 35 U.S.C. 102(b) as being anticipated by Tokuo et al. (JP 05-318653). A machine translation provided by the JPO website has been relied upon for the following rejection. All citations are directed towards the machine translation.

Regarding claims 1, 4, 7, 28, 31, 34, and 40, Tokuo et al. disclose *(1)* a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal hydroxide (paragraph 0006), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0011); *(4)* wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0011); *(7)* wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0011); *(28)* which is used for impregnation into a substrate an subsequent curing for formation of a laminate (paragraphs 0008 and 0013); *(31)* wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin,

molybdenum, copper, iron, and titanium (paragraph 0012); ***(34)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (paragraph 0012); and ***(40)*** a prepreg obtained by impregnating the flame-retardant epoxy resin composition set forth in claim 1, into a substrate and curing the impregnated composition (paragraph 0008).

Regarding claims 2, 5, 8, 29, 32, 35, and 41, Tokuo et al. disclose ***(2)*** a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal hydroxide (paragraph 0006), wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0009); ***(5)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0009); ***(8)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0009); ***(29)*** which is used for impregnation into a substrate an subsequent curing for formation of a laminate (paragraphs 0008 and 0013); ***(32)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (paragraph 0012); ***(35)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (paragraph 0012); and ***(41)*** a prepreg obtained by

impregnating the flame-retardant epoxy resin composition set forth in claim 1, into a substrate and curing the impregnated composition (paragraph 0008).

Regarding claims 3, 6, 9, 30, 33, 36, and 42, Tokuo et al. disclose ***(3)*** a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal hydroxide (paragraph 0006), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0011), and wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C') containing in a molecular chain, a structural unit derived from a phenol (A') and a structural unit derived from an aromatic compound (B') other than the phenol (A') (paragraph 0009); ***(6)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0011); ***(9)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0011); ***(30)*** which is used for impregnation into a substrate an subsequent curing for formation of a laminate (paragraphs 0008 and 0013); ***(33)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (paragraph 0012); ***(36)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate

(paragraph 0012); and ***(42)*** a prepreg obtained by impregnating the flame-retardant epoxy resin composition set forth in claim 1, into a substrate and curing the impregnated composition (paragraph 0008).

Regarding claims 43, 46, 49, 70, and 73, Tokuo et al. disclose ***(43)*** a laminate obtained by impregnating (paragraphs 0001 and 0006) a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal hydroxide (paragraph 0006), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0011); ***(46)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0011); ***(49)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0011); ***(70)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (paragraph 0012); and ***(73)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (paragraph 0012).

Regarding claims 44, 47, 50, 71, and 74, Tokuo et al. disclose ***(44)*** a laminate obtained by impregnating (paragraphs 0001 and 0006) a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal

hydroxide (paragraph 0006), wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0009); ***(47)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0011); ***(50)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0011); ***(71)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (paragraph 0012); and ***(74)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (paragraph 0012).

Regarding claims 45, 48, 51, 72, and 75 Tokuo et al. disclose ***(45)*** a laminate obtained by impregnating (paragraphs 0001 and 0006) a flame-retardant epoxy resin composition (paragraph 0006) comprising an epoxy resin (paragraph 0006), a curing agent (paragraph 0006), and a metal hydroxide (paragraph 0006), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (paragraph 0011), and wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C') containing in a molecular chain, a structural unit derived from a phenol (A')

and a structural unit derived from an aromatic compound (B') other than the phenol (A') (paragraph 0009); ***(48)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (paragraph 0011); ***(51)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (paragraph 0011); ***(72)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (paragraph 0012); and ***(75)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (paragraph 0012).

Claim Rejections - 35 USC § 102/103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-12 and 28-39 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hirano et al. (US Pat. No. 6,120,858).

Regarding claims 1, 4, 7, 10, 31, 34, and 37, Hirano et al. disclose ***(1)*** epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (column 9, lines 17-44, specifically line 24), wherein the curing agent is a

phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (column 3, line 60 through column 4, line 9; column 4, lines 56-62); ***(4)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (column 3, line 60 through column 4, line 9; column 4, lines 56-62); ***(7)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (column 3, line 60 through column 4, line 9; column 4, lines 56-62); ***(10)*** wherein the content of metal hydroxide is 10% by mass to 70% by mass relative to the total amount of epoxy resin composition (column 9, lines 34-39); ***(31)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (column 9, lines 17-44, specifically line 24); ***(34)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (column 9, lines 17-44, specifically line 24); and ***(37)*** an epoxy varnish solution obtained by dispersing the epoxy composition set forth in claim 1, in an organic solvent (column 9, lines 45-49).

Regarding claims 2, 5, 8, 11, 32, 35 and 38, Hirano et al. disclose ***(2)*** epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (column 9, lines 17-44, specifically line 24), wherein the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic

resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (column 3, lines 19-51); ***(5)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (column 3, lines 19-51); ***(8)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (column 3, lines 19-51); ***(11)*** wherein the content of metal hydroxide is 10% by mass to 70% by mass relative to the total amount of epoxy resin composition (column 9, lines 34-39); ***(32)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (column 9, lines 17-44, specifically line 24); ***(35)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (column 9, lines 17-44, specifically line 24); and ***(38)*** an epoxy varnish solution obtained by dispersing the epoxy composition set forth in claim 1, in an organic solvent (column 9, lines 45-49).

Regarding claims 3, 6, 9, 12, 33, 36, and 39, Hirano et al. disclose ***(3)*** epoxy resin composition (Abstract) comprising an epoxy resin (Abstract), a curing agent (Abstract), and a metal hydroxide (column 9, lines 17-44, specifically line 24), wherein the curing agent is a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (column

3, line 60 through column 4, line 9; column 4, lines 56-62), and the epoxy resin is a novolak epoxy resin (D) obtained by glycidyletherifying a phenolic hydroxyl group of a phenolic resin (C) containing in a molecular chain, a structural unit derived from a phenol (A) and a structural unit derived from an aromatic compound (B) other than the phenol (A) (column 3, lines 19-51); ***(6)*** wherein the aromatic compound (B) is a compound selected from the group consisting of biphenyl and its derivatives, benzene and its derivatives, diphenyl ether and its derivatives, naphthalene and its derivatives, anthracene and its derivatives, fluorine and its derivatives, bisphenol fluorene and its derivatives, bisphenol S and its derivatives, bisphenol F and its derivatives, and bisphenol A and its derivatives (column 3, line 60 through column 4, line 9; column 4, lines 56-62); ***(9)*** wherein the phenolic resin (C) has recurring units represented by one of formulas I-IV *refer back to the original claims for structures* (column 3, line 60 through column 4, line 9; column 4, lines 56-62); ***(12)*** wherein the content of metal hydroxide is 10% by mass to 70% by mass relative to the total amount of epoxy resin composition (column 9, lines 34-39); ***(33)*** wherein the metal hydroxide is a metal oxide containing at least one element selected from the group consisting of aluminum, magnesium, zinc, boron, calcium, nickel, cobalt, tin, molybdenum, copper, iron, and titanium (column 9, lines 17-44, specifically line 24); ***(36)*** wherein the metal hydroxide is aluminum hydroxide, magnesium hydroxide, or zinc borate (column 9, lines 17-44, specifically line 24); and ***(39)*** an epoxy varnish solution obtained by dispersing the epoxy composition set forth in claim 1, in an organic solvent (column 9, lines 45-49).

In all of the above claims, Hirano et al. disclose all of the claimed components of the epoxy resin composition but fail to explicitly disclose that the epoxy resin composition is flame-

retardant. It has been found that a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In addition, the limitations of claims 28-30 are met by the reference because claims 28-30 fail to further limit parent claims 1-3.

Therefore, if not explicitly taught by the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Allowable Subject Matter

10. Claims 13-27, 52-60, and 76-78 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 61-69 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Claims 13-27, 55-57, and 61-69:

Claims 13, 14, and 15 further provide a silicone compound in each of the composition embodiments of clams 1-3. The silicone compound has a branched structure main chain having an aromatic-derived group. The closest prior art is Osada et al. (US Pat. No. 6,162,878). Osada et al. combine this type of silicone compound with an epoxy resin and a phenolic curing that meet the requirements of the instant invention. In a comparative example, Osada et al. use a

quantity of aluminum hydroxide instead of the silicone compound. Nowhere do Osada et al. combine all four of these ingredients into one composition. In addition, Osada et al. fail to teach or suggest such a combination.

Claims 16-27 would be allowable because they depend on claims 13-15. Laminate claims 55-57 would be allowable because the prior art fails to teach or suggest the composition of claim 13-15; hence, the prior art fails to teach or suggest a laminate comprising the composition of claims 13-15. Claims 61-69 would be allowable because they depend on claims 55-57.

Claims 52-54, 58-60:

Regarding claims 52-54 and 58-60, the prior art fails to teach or suggest a laminate of claims 43-45, wherein the content of metal hydroxide is 10%-70% or 5%-70% by mass relative to the total composition. Hirano et al. teach a composition that meets these limitations; however, they fail to teach or suggest a laminate using a prepreg derived from the composition. Hirano et al. use their composition as a sealant for liquid crystal cells.

Claims 76-78:

Regarding claims 76-78, the prior art fails to teach or suggest a laminate of claims 43-45, wherein the laminate satisfies the claimed bending strength, mass proportion of substrate, and thermal decomposition properties. The closest prior art is Tokuo et al. Tokuo et al. teach the laminate of claims 43-45; however, they provide no showing that their combination layers in a laminate would produce the claimed properties.

Y-References of the International Search Report

13. The international search report indicated that the following references: US Pat. No. 6,130,282, JP 2000-053845, and JP 11-246741, could be combined with JP 11-140277 to meet the limitations of claims 1-78. JP 11-140277 has the following US equivalent: Iwasaki et al. (US Pat. No. 6,242,110). Iwasaki et al. teach a composition that is similar to the instant invention; however, they fail to teach or suggest the use of a metal hydroxide. In fact, they teach away from using a metal hydroxide. Therefore, it would not be proper to combine Iwasaki et al. with any of the other references.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Robert A. Dawson

Michael J. Feely
July 14, 2003

Robert Dawson
Supervisory Patent Examiner
Technology Center 1700